



# THE HANFORD SITE

## Chronic Beryllium Disease Prevention Program (CBDPP)

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U.S. DEPARTMENT OF ENERGY

# CHPRC Be Facility Assessment

The Site-wide Industrial Hygiene Database (SWIHD) doesn't track buildings that were demolished prior to 2015.

Facility Type	Status	# of Facilities
Building	Beryllium Cleared	70
Building	Beryllium Controlled	25
Building	Uncharacterized EDE only	489
Building	Demolished since 2015	36
Conex	Beryllium Cleared	577
Conex	Beryllium Controlled	5 (all disposed of)
Conex	BSA Awaiting Sampling	8
Structure	Beryllium Cleared	189
Structure	Beryllium Controlled	4
Outdoor Areas	Beryllium Controlled	0



# CHPRC Be Wipe Samples

TL – Trigger Level (0.1  $\mu\text{g}/100\text{ cm}^2$  for wipe samples or 1.0  $\mu\text{g}/\text{g}$  for bulk samples)

CL – Control Level (0.2  $\mu\text{g}/100\text{ cm}^2$  for wipe samples or 2.0  $\mu\text{g}/\text{g}$  for bulk samples)

Year	< TL	TL to < CL	$\geq$ CL
2010	2531	21	26
2011	4559	45	65
2012	1337	4	27
2013	1876	0	0
2014	3189	0	1
2015	5570	6	1
2016	1971	6	2
2017	2771	2	2
2018	957	1	0



# CHPRC Be Bulk and Breathing Zone Samples

## Bulk Sampling

Year	< TL	TL to < CL	≥ CL
2010	1024	26	16
2011	448	1	1
2012	8	0	0
2013	88	0	0
2014	314	0	0
2015	589	1	0
2016	79	1	0
2017	221	11	2
2018	10	1	0

IL – Investigative Level ( $0.02 \mu\text{g}/\text{m}^3$ )

AL – Action Level ( $0.1 \mu\text{g}/\text{m}^3$ )

## Breathing Zone Sampling

Year	Employees Sampled	< IL	IL to < AL	≥ AL
2010	112	308	0	0
2011	131	295	0	0
2012	68	176	0	0
2013	65	148	0	0
2014	100	222	0	0
2015	120	525	0	0
2016	147	509	0	0
2017	182	497	0	0
2018	37	86	0	0



# WRPS Be Facility Assessment

Facility Type	Status	# of Facilities
Building	Beryllium Cleared	83
Building	Beryllium Controlled	7
Building	Uncharacterized EDE only	211
Building	Demolished since 2015	0
Conex	Beryllium Cleared	185
Conex	Beryllium Controlled	1 (disposed of April 2018)
Conex	BSA Awaiting Sampling	68
Structure	Beryllium Cleared	7
Structure	Beryllium Controlled	232
Outdoor Areas	Beryllium Controlled	18

The SWIHD doesn't track buildings that were demolished prior to 2015.



# WRPS Wipe Samples

TL – Trigger Level ( $0.1 \mu\text{g}/100 \text{ cm}^2$  for wipe samples or  $1.0 \mu\text{g}/\text{g}$  for bulk samples)

CL – Control Level ( $0.2 \mu\text{g}/100 \text{ cm}^2$  for wipe samples or  $2.0 \mu\text{g}/\text{g}$  for bulk samples)

Year	< TL	TL to < CL	$\geq$ CL
2010	1245	43	0
2011	442	4	1
2012	389	3	1
2013	246	0	0
2014	303	2	3
2015	575	2	0
2016	714	2	0
2017	3585	0	0
2018	2544	0	0



# WRPS Bulk and Breathing Zone Samples

## Bulk Sampling

Year	< TL	TL to < CL	≥ CL
2010	527	3	3
2011	122	8	1
2012	65	0	0
2013	109	1	0
2014	359	2	0
2015	687	0	1
2016	2191	9	16
2017	796	7	12
2018	782	1	0

IL – Investigative Level ( $0.02 \mu\text{g}/\text{m}^3$ )

AL – Action Level ( $0.1 \mu\text{g}/\text{m}^3$ )

## Breathing Zone Sampling

Year	Employees Sampled	< IL	IL to < AL	≥ AL
2010	15	27	0	0
2011	75	99	0	0
2012	30	54	0	0
2013	9	14	0	0
2014	20	65	0	0
2015	48	136	1	0
2016	71	249	0	0
2017	191	591	0	0
2018	91	220	0	0



# WRPS Lessons Learned

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## Be Work Activities/Controls in Tank Farms

- Give consideration to more accurately and consistently defining what constitutes intrusive work when accessing/working in tank farm Be Suspect Areas (pits, vaults, etc.).
- Conduct exposure assessments for common tank farm work activities and maintain negative exposure assessments.
- Proactively work with the Site-wide CBDPP Committee to address questions and concerns that are not explicitly addressed in DOE-0342 and associated procedures as the program applies to tank farm work.
- Consider incorporating specific Tank Farm Operations Contractor (TOC) implementation methods into DOE-0342 to institutionalize how future TOCs execute the CBDPP in tank farms.



# WRPS Lessons Learned, cont.

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## Technical Evaluations Correlating Beryllium Concentrations to Radioactivity

- Consider an initial, small-scale pilot program (rather than full scale) when implementing technical evaluations correlating beryllium contamination to radioactivity in tanks farms.
- Periodically review technical basis documents used to evaluate/estimate potential beryllium exposures/concentrations and update as necessary.
- Develop a technical evaluation to estimate concentrations of beryllium (from historic tank waste/supernatant spills) in soils during excavation work in tank farms.
- Conduct air and surface beryllium sampling to supplement/support the use of the technical evaluation.
- Work with the Site-wide CBDPP Committee to develop direction, methods, and procedures for de-posting outdoor area Be Controlled Facilities and Be Controlled Areas.



# MSA Be Facility Assessment

Facility Type	Status	# of Facilities
Building	Beryllium Cleared	39
Building	Beryllium Controlled	10
Building	Uncharacterized EDE only	186
Building	Demolished since 2015	4
Conex	Beryllium Cleared	303
Conex	Beryllium Controlled	0
Conex	BSA Awaiting Sampling	0
Structure	Beryllium Cleared	48
Structure	Uncharacterized EDE only	48
Outdoor Areas	Beryllium Controlled	0

The SWIHD doesn't track buildings that were demolished prior to 2015.



# MSA Be Wipe Samples

**TL – Trigger Level (0.1 µg/100 cm<sup>2</sup> for wipe samples or 1.0 µg/g for bulk samples)**

**CL – Control Level (0.2 µg/100 cm<sup>2</sup> for wipe samples or 2.0 µg/g for bulk samples)**

Year	< TL	TL to < CL	≥ CL
2010	N/A	N/A	N/A
2011	262	0	0
2012	513	0	0
2013	3176	9	2
2014	1877	4	4
2015	1012	5	7
2016	912	0	0
2017	598	1	0
2018	119	0	0



# MSA Bulk and Breathing Zone Samples

## Bulk Sampling

Year	< TL	TL to < CL	≥ CL
2010	N/A	N/A	N/A
2011	33	0	0
2012	402	3	0
2013	2056	15	13
2014	584	12	15
2015	183	1	0
2016	245	5	4
2017	325	0	2
2018	28	4	2

IL – Investigative Level (0.02 µg/m<sup>3</sup>)

AL – Action Level (0.1 µg/m<sup>3</sup>)

## Breathing Zone Sampling

Year	Employees Sampled	< IL	IL to < AL	≥ AL
2010	NA	NA	N/A	N/A
2011	14	15	0	0
2012	5	5	0	0
2013	20	128	0	0
2014	13	78	0	0
2015	5	11	0	0
2016	4	5	0	0
2017	10	20	0	0
2018	5	7	0	0



# HPMC Be Medical Surveillance Program

## As of August 1, 2018

- Beryllium Worker Program (BEWK1): 2,895 workers
- Beryllium Voluntary Program (BEVOL1) – every three years: 753 enrollees
- Beryllium Voluntary Program – Annual (BEVOL2): 112 workers
- Beryllium Voluntary Program – WASTRN (BEVOL3): 39 workers

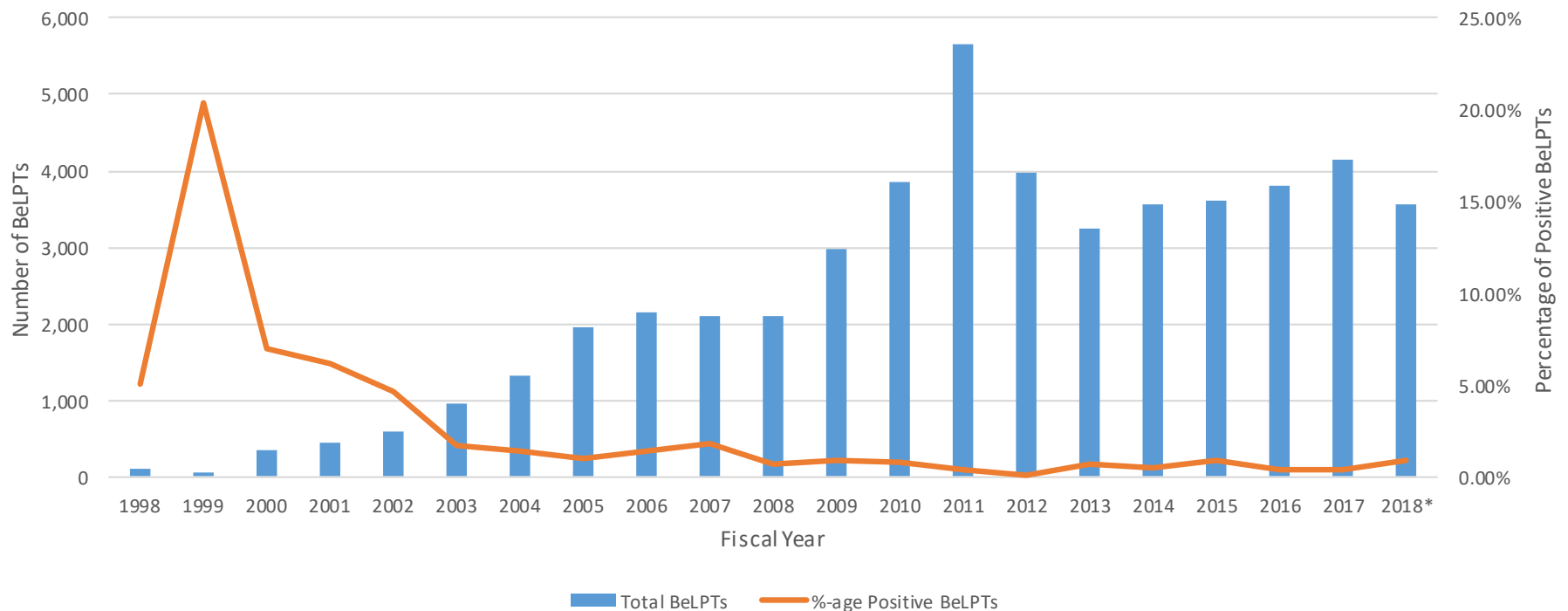
There are four medical surveillance programs at HPMC OMS; each has its own requirements.

- BEWK1 is the medical surveillance program for workers whose EJTA identifies them as beryllium workers.
- BEVOL1 is the medical surveillance program for workers, who are not BEWK1 workers.
- BEVOL2 is the medical surveillance program for active workers who are currently beryllium sensitized.
- BEVOL3 is the medical surveillance program for active workers employed by WAI Hanford Laboratories (aka WASTREN).



# HPMC Be Medical Surveillance Program

## Total BeLPT Results by Fiscal Year with Percentage of Positive BeLPT Results



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# HPMC Be Medical Surveillance Program

## Prevalence

	Ever Diagnosed While Working at Hanford	Currently Working at Hanford
Beryllium Sensitization	260	139
Chronic Beryllium Disease	45	15
Sarcoidosis	33	13
TOTAL	338	167

**Latency - There is a variable latency period between exposure to beryllium and development of sensitization (positive or abnormal BeLPTs). This period can vary from weeks to years, even decades after exposure. This makes determining when and where an individual may have been exposed difficult and, consequently, the effectiveness of exposure prevention programs.**



Questions?

